## 2. OBSERVATIONS IN SUPPORT OF THE PENDING CLAIMS

### 2.1. Novelty

**Document D1 (DE 24 11 219 A1) Kanzaki Paper Manufacturing Co., Ltd.**

New claim 1 specifies that the coating is carried out *in at least two distinct consecutive steps.*

Document D1 describes calcium carbonate particles carrying thereon a surface treating agent which is a member selected from the group consisting of fatty acids having at least 5 carbon atoms, polyhydric alcohol esters of said fatty acids, ammonium salts and metal salts of said fatty acids, resin acids, metal salts of said resin acids and mixtures of the foregoing. The only disclosed coating process is a one step process (examples 1, 2 and 3).

New claim 1 and those which depend on or are related to claim 1 are therefore novel vs. D1.

**Document D2 (GB 1328361) General Electric Co.**

New claim 1 specifies that the particles comprise *a core of precipitated calcium carbonate.*

Document D2 describes an organopolysiloxane composition which comprises an organopolysiloxane, a calcium carbonate, a calcium carbonate surface treated with stearic acid and an additive which may be water or an humectant (which can be a polyhydric alcohol). No mention is made of a precipitated calcium carbonate.

New claim 1 and those which depend on or are related to claim 1 are therefore novel vs. D2.

**Document D3 (DE 1292374 B) Wyandotte Chemicals Corp.**

New claim 1 specifies that that the particles comprise *a core of precipitated calcium carbonate.*

D3 describes a two steps process (column 3, lines 22-30) for preparing a calcium carbonate pigment with a layer comprising an amine and a fatty acid. No mention is made of a precipitated calcium carbonate.

New claim 1 and those which depend on or are related to claim 1 are therefore novel vs. D1.

**Document D4 (WO 02/055596) Omya AG**

New claim 1 specifies that the coating is carried out *in at least two distinct consecutive steps* and that *a second coating agent selected from polyhydric alcohols, esters of carboxylic acids, or mixtures thereof,* is being used in the second step.

D4 describes a process for surface treating a mineral filler wherein the surface treatment is carried in two steps, the first one comprising a treatment with a polydialkylsiloxane and the second step comprising a treatment with a least one fatty acid. No mention is made of a polyhydric alcohol or of an ester used in one of the steps of the coating.

New claim 1 and those which depend on or are related claim 1 are therefore novel vs. D4.

### 2.2 Inventive step

The problem to solve is to provide a calcium carbonate with very constant quality so as to enable a user to obtain a polymer composition exhibiting constant rheological properties by adding such calcium carbonate, without the need of any further processing of the filled polymer composition (page 8, lines 19-29).

In the pending application, the problem is solved by controlling the surface coating of precipitated calcium carbonate filler, before addition to a polymer composition, by using two different agents in two different steps to coat the surface of the calcium carbonate, one of the agent being a polyhydric alcohol or an ester of a carboxylic acid.

**First option**

The closest prior art document to be considered is D2 since it is about the control of the viscosity (a rheological property) of polymer compositions.

In D2, the control of the viscosity of the polymer composition is done by adding an additive (water or an humectant which can be a polyhydric alcohol) to an already prepared polymer-filler (calcium carbonate) mixture. The switch from low to high and from high to low viscosities is by adding/removing the additive suggesting that this additive is free (not bound) in the mixture (page 1, lines 46-78). This teaches away from using a calcium carbonate coated with two different coating agents (bound to the surface filler).

None of the other documents D1, D3 and D4 would suggest using a calcium carbonate coated with two different agents as in the present invention to adjust the rheological properties of polymer compositions. D1 is about the preparation of electrostatic recording material exhibiting rough surface and the coating treatment is a one step process. D3 is about the improvement of mechanical properties of rubber filled compositions. D4 is about hydrophobizing fillers to make them suitable for incorporation in breathable films.

None of the teachings of D1, D2, D3 and D4 taken alone or in combination would have led the skilled man to use the now claimed coated precipitated calcium carbonate particles.

New claim 1 and those which depend on or are related to claim 1 therefore involve an inventive step.

**Second option**

The closest prior art document to be considered is D4 since it is about the coating of precipitated calcium carbonate by a two separate step process using two different coating agents for each step. However, D4 does not mention the use of polyhydric alcohols or esters of carboxylic acids as one of the coating agents.

D2 mentioned the use of polyhydric alcohols as additives in compositions containing stearic acid coated calcium carbonate. In D2 however, the polyhydric alcohol is added to an already prepared polymer-filler (calcium carbonate) mixture. D2 also indicates that the switch from low to high and from high to low viscosities of the final composition is by adding/removing the additive, therefore suggesting that the additive is free (not bound) in the mixture (page 1, lines 46-78). This teaches away from a calcium carbonate coated with two different coating agents (bound to the surface filler).

None of the other documents D1 and D3 suggest the use of polyhydric alcohols or esters of carboxylic acids as coating agents.

None of the teachings of D1, D2, D3 and D4 taken alone or in combination would have led the skilled man to use the now claimed coated precipitated calcium carbonate particles.

New claim 1 and those which depend on or are related to claim 1 therefore involve an inventive step.

The applicant therefore estimates that the present patent application fulfills the requirements of Articles 54 and 56 CBE about novelty and inventive step and requests the granting of a patent on basis of the pending claims.

In case the Examining Division would reject the present patent application, an oral hearing is requested.

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Enclosures :

1. Set of amended claims
2. Set of amended claims where the modifications are apparent

## CLAIMS

1 - Particles comprising a core of precipitated calcium carbonate and a coating covering at least part of the surface of the core, the coating being carried out in at least two distinct consecutive steps, each step using a different coating agent, a first coating agent selected from alkylsulfates, sulfonic acids, carboxylic acids, their salts and their esters, fatty alcohols, polyhydric alcohols or mixture thereof, being used in the first step, and a second coating agent selected from polyhydric alcohols, esters of carboxylic acids, or mixtures thereof, being used in the second step.

2 - The particles of claim 1 wherein the carboxylic acid is a fatty acid and the polyhydric alcohol is a diol or a triol.

3 - The particles of claim 1 or 2 wherein the carboxylic acid is stearic acid, and the polyhydric alcohol is 1,2-ethanediol or glycerol.

4 - The particles of claim 1 wherein the carboxylic acid used as the first coating agent is a fatty acid and the ester of carboxylic acid used as second coating agent is a phthalic acid ester.

5 - Process for the preparation of particles conform to any one of claims 1 to 4, in which the particles are first brought into contact with a first coating agent and then a second coating agent is applied to the particles .

6 - Process according to Claim 5 wherein, the second coating agent is applied in liquid, dissolved, solid or gas form.

7 - Use of the particles according to any of the claims 1 to 4 as a filler.

8 - The use according to claim 7 in rubbers, inks, plastisols, sealants, papers, paints, coatings, pharmaceuticals, foods and cosmetics.